

## RESULTS OF THE YALE PERUVIAN EXPEDITION OF 1911. ORTHOPTERA (EXCLUSIVE OF ACRIDIIDÆ).

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The Peruvian localities mentioned in this paper are for the most part absent from printed maps and geographical indices. Most of the Orthoptera taken by the expedition were collected at a few localities in southeastern Peru. Pampaconas River, a locality given for a goodly number of species, is an uncharted stream flowing between the Urubamba and Apurimac Rivers.

By previous agreement representatives of all Orthoptera taken by the expedition and the types of all new species are deposited in the United States National Museum.

### Family BLATTIDÆ.

#### CHORISONEURA PERUANA, new species.

Allied to *C. pellucida* Saussure, from Mexico.

*Male*.—Color a nearly uniform brownish yellow, the disk of the pronotum with the underlying part of the thorax showing through as a darker central portion. Pronotum broadly rounded anteriorly and behind almost truncate. Elytra extending much beyond the tip of the abdomen; wings with an apical area about as long as broad acuteangulate basally and apically extending barely beyond the tip of the costal field, broadly rounded and faintly notched mesially. Supraanal plate broadly transverse and very obtuseangulate apically; subgenital plate small and succeeded by a pair of upwardly directed, basally broadened styles. Legs slender, the femora unarmed beneath except with short bristles.

Length, entire from front of head to tip of elytra, 13 mm.; pronotum, 2 mm.; elytra, 11 mm.

*Type*.—One male, Huadquina, July 31, 5,000 feet altitude. Cat. No. 15046, U.S.N.M.

## ISCHNOPTERA PAMPACONAS, new species.

A medium sized blackish red-brown species apparently differing from any described species recorded from Peru or surrounding regions.

*Female*.—Size medium; body depressed; form elongate, the closed wings surpassing the tip of the abdomen by fully a third their length; head not quite concealed beneath the pronotum; ocelli large and situated sublaterally next the inner-upper margin of antennal scrobæ next the eye; interocellar space broader than the interocular space, which is about as broad as the width of one eye; antennæ covered with fine short hairs. Pronotum narrowly rounded in front and broadly rounded behind, the sides deflexed, the disk dimpled on each side of the middle. Elytra long and slender, semi-coriaceous, the veins fairly distinct, the costal field long and narrow; wings in repose as long as the tegmina, transparent, the anterior field apically a little infuscated; ulnar vein with two complete branches extending to the apex and with seven or eight incomplete veins; there are more than a dozen costal veins, two or three of which are forked and many of them apically somewhat swollen. Legs slender, the anterior femora armed beneath on the front margin with three or four stout spines on the basal half followed on apical part by a row of fine short ones; arolia between the claws very small and inconspicuous, often hard to see. Supraanal plate considerably produced and apically rounded; subgenital plate broad and posteriorly broadly rounded, entire; cerci stout and long, finely haired.

General color a very dark-reddish brown, the pronotum almost uniformly black and the legs light yellowish, as are also the mouth and palpi. The ocelli are a transparent reddish, the antennæ brown and the costal margin of elytra is anteriorly a little lighter. The elytra are posteriorly a little more transparent and thus less dark.

Length, total from head to end of elytra, 18 mm.; pronotum, 3 mm.; elytra, 14 mm.; width, pronotum, 3.5 mm.; elytra at widest point, 4 mm.

*Type*.—One female Pampaconas River, August. Cat. No. 15047, U.S.N.M.

It may have been this species which Bolivar recorded from Peru<sup>1</sup> as *I. consobrina*.

## ISCHNOPTERA IGNOBILIS Saussure,

One female, Pampaconas River, August.

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<sup>1</sup> Anal. Soc. Espan. Hist. Nat., vol. 10, 1881, p. 466.

*BLATTELLA STYLATA*, new species.

A moderate sized species apparently somewhat allied to *B. peruana* Shelford and other species described by that author. In some of the characters, however, it differs from those given for any of the described forms.

*Male*.—Palpi with the last segment considerably enlarged basally and tapering from there to the tip, beneath brownish; antennæ slender and sparsely hairy. Pronotum truncate posteriorly, anteriorly very broadly rounded, the sides broadly translucent. Elytra extending distinctly beyond the tip of the abdomen and, except for the brownish cross veinlets, nearly uniform in color; wing with eleven apically swollen costal veins; ulnar vein five-branched, the first and second branches confluent apically. Femora all well armed beneath, the anterior ones armed beneath along the entire margin, the spines growing gradually shorter toward the apex. Supraanal plate broadly transverse, apically entire; subgenital plate large, slightly longer than broad and apically prolonged at each side as a style-like projection, which is apically armed with two or three very small but stout spines, and between these projections there are two apically more or less expanded asymmetric organs which are very finely serrate, or spined, on the inner margin; cerci long, stout, and strongly depressed.

Color clear yellowish brown, the disk of the pronotum with some small oblique black dashes and the cross veins of the elytra brown; abdomen beneath mesially fuscous to the base of the terminal segment and with smaller dark maculations along the margins; the tarsal joints, except the first, are partially black and the tibiæ on the outer side bear conspicuous black spots at the base of the spines; femora unicolorously yellowish brown except for small blackish spots at the base of the ventral spines beneath on the middle and hind pairs; the face has some blackish lines and dashes.

Length, entire from front of head to end of elytra, 14 mm.; pronotum, 3 mm.; elytra, 11 mm.; width, pronotum, 4.5 mm.

*Type*.—One female, San Miguel, September 1, 6,000 feet altitude. Cat. No. 15048, U.S.N.M.

*PHÆTALIA LÆVIGATA* Beauvois.

One male, Huadquina, July 30, 5,000 feet altitude; one female, same locality, July 31.

*EPILAMPRA*, species.

One male, one female, San Miguel, July 24, 6,000 feet altitude; one female, Lucma, August 7, 7,000 feet altitude; one female, Pampaconas River, August.

In the present state of our knowledge of the species of this genus it is scarcely possible to determine these specimens specifically. The female specimen from Pampaconas River has the elytra extending to

the tip of the abdomen, while in the other females they fall distinctly short of it; otherwise they are similar.

**BLATTA TINCOCHACA**, new species.

*Female*.—The smallest species of the genus known to me. Head moderately exposed, the eyes small and wide apart and very inconspicuous, the interocular space more than twice as broad as the space between the antennæ; ocelli scarcely noticeable; terminal segment of the palpi swollen basally, tapered apically. Pronotum truncate posteriorly, anteriorly subtruncate above the head and then, together with the sides, rounded. Legs moderately stout, the fore femora scarcely spined beneath, but the middle and hind ones quite strongly spined, the spines few in number; arolia between the tarsal claws small but distinct. Wings rudimentary; elytra short, about as long as the pronotum and posteriorly very broadly rounded, almost truncate, dorsally separated by a space equal to about one-fourth the width of one of them. Abdomen short and broad, the supraanal plate broadly triangular, about twice as broad as long, apically entire; subgenital plate valvular as in *Blatta orientalis* except the slit is more apical, extending a lesser distance toward the base.

General color black, the legs yellowish brown with the femora and tibiæ black at each end and the joints of the tarsi blackish; the abdomen is a little lighter below than above and the margins of the segments, especially beneath, are obscurely yellowish; pronotum and costal margin of elytra yellowish, about one-fourth of the elytral width occupied by this yellowish margin; head entirely black except a lightish tinge about the mouth parts, the eyes and vertex uniformly black, the eyes very inconspicuous; antennæ dark brown, nearly black, with the basal part growing yellowish.

Length, entire from front of head to end of abdomen exclusive of cerci, 6.5 mm.; width across widest part of abdomen, about 3.5 mm.

*Type and paratype*.—Two females, Tincochaca, August 8, altitude 7,000 feet. Cat. No. 15049, U.S.N.M.

**OXYCERCUS PERUVIANUS** Bolivar.

One female, Torontoy, July 22, 8,000 feet altitude.

**DASYPOSOMA NIGRA** Bruner.

Five female specimens ranging from apparently full grown to one less than one-half inch long. All from Urubama, Peru, July 11, 9,500 feet altitude.

Family PHASMODÆ.

**AUTOLYCA TRANSVERSATA**, new species.

Allied to *A. picturata* Redtenbacher and runs to that species in the table of species in the works of that author.<sup>1</sup> The posteriorly

<sup>1</sup> Ins. Fam. Phasm., p. 95, 1908.

margined segments of the thorax and abdomen will readily separate these two species.

*Male and female*.—Head subquadrate, about as broad as long; antennæ of the usual structure, the basal segment flattened. Pronotum about the same in width and breadth, the mesonotum about twice as long as the pronotum and slightly broader; intermediate segment obscurely indicated, subequal in length with the metanotum from which it is usually separated by a couple of small subdorsal transverse light-colored spots. Abdomen moderately swollen in the female, in the male parallel sided, the segments transverse, female, or quadrate, male. Operculum of female nearly as broad as the segment of the abdomen from which it arises, reaching to the tip of the last segment and apically slightly acuteangulate; operculum of the male large, fully as broad as the last segments of the abdomen. Cerci of both sexes simple, short and stout, in the female straight, in the male almost straight. All the femora distinctly carinate, the anterior one almost straight, at the base very slightly curved; tibiæ also carinate, the sides sulcate; tibiæ generally lighter colored beneath and covered with fulvous pile. The whole insect is covered with short hairs or pile as is common in the genus.

General color velvet black, the antennæ ringed with whitish yellow and the segments of the abdomen and thorax posteriorly margined above with white. The tip of the femora is distinctly light colored, as is also the base of the tibiæ for a very short distance and the tip of the tibiæ and base of the first tarsal segment is more or less whitish. Clypeus also light yellowish.

Length, entire, male, 30 mm., female, 45 mm.; antennæ, male, 27 mm., female, all but 15 mm. gone; mesonotum, male, 5 mm., female, 8 mm.; fore femora, male, 9.5 mm., female, 11 mm.; cerci, male and female, 1.5 mm.

*Holotype*.—One male, Huadquina, Peru, July 26, 1911, 5,000 feet altitude.

*Allotype*.—One female, July 30, same locality; one male paratype, same data as the holotype. Holotype and allotype, Cat. No. 15050; U.S.N.M.

#### Family LOCUSTIDÆ.

##### DASYSCELUS, species.

One immature female. Pampaconas River, August.

This may be the *D. planiusculus* of Brunner, but the immature state of the only specimen represented prohibits its specific determination.

##### NANNOTETRIX PALTAYBAMBA, new species.

A species most nearly related to *N. guentheri* Brunner and running to that species in Brunner's tables. It differs, however, from *guentheri* in several particulars, besides being considerably larger.

*Male*.—Fastigium of the vertex elongate triangular, sulcate dorsally and not surpassing the antennal scrobæ; eyes moderately prominent; antennæ slender, much longer than the body. Pronotum ruggose both above and on the lateral lobes, truncate behind, subtruncate before, the anterior transverse sulcus distinct but not so conspicuous as the median sulcus; lateral lobes considerably longer than high, the lower margin straight, humeral sinus distinct but broad; no median nor lateral carinæ but the shoulders behind the median transverse sulcus are somewhat angular; disk anterior of the median transverse sulcus very finely sulcate longitudinally down the middle line; prosternal spines well developed. Legs moderately stout; anterior tibiæ with conchate foramina, the dorsal surface broadly and shallowly sulcate and unarmed; middle tibiæ similar to the front but armed on the posterior margin above with six small short stout sharp spines; both fore and middle tibiæ armed beneath on both margins; hind tibiæ armed beneath with a number of small spines in two series, those on the apical part situated opposite, those on the basal part further apart and alternate; above armed on both margins, an apical spine present only on the inner side; femora moderately stout, all the geniculations unarmed except those of the middle legs on the inner side which are spinose; all femora unarmed above, armed beneath with a single row of spines on the outer carina of the fore and middle legs and the inner side of the fore legs. Abdomen plump; subgenital plate elongate, apically narrowed and notched, each angle bearing a heavy style about four times as long as broad, apically rounded and barely tapering; cerci subspherical with a short sharply pointed curved tooth on the inner side; supraanal plate apically rounded, deflexed and broadly dimpled above.

Elytra very little longer than the pronotum, posteriorly rounded and with a well-developed speculum and distinct veins. Wings concealed beneath the elytra and equaling about two-thirds their length.

General color yellowish; head above with three longitudinal black streaks, the middle one extending anteriorly over the top of the fastigium of the vertex and the lateral ones smaller and extending from the top part of the eyes to the back of the head; the basal segment and scrobæ of the antennæ are mostly black and the face has blackish spots; the pronotum is wholly black in front of the anterior transverse sulcus and the shoulders and the middle of the posterior part of the disk is also black; all the spines of the legs and also the extremities of the femora and tibiæ are blackish; elytra blackish with conspicuous yellowish veins.



Length, entire from front of head to end of body, 32 mm.; pronotum, 9 mm.; elytra, 11 mm.; fore tibiæ, 11 mm.; fore femora, 10 mm.; hind femora, 24 mm.

*Type*.—One male. Paltaybamba, August, 5,000 feet altitude. Cat. No. 15051, U.S.N.M.

**NANNOTETTIX PERUVIANUS, new species.**

*Male*.—Similar to the last, but smaller and with longer wings. In Brunner's table of species it runs to *elongatus*, but it is a larger species than that more southern form. Head as described under *N. paltaybamba*. Pronotum rugose both above and on the lateral lobes, truncate posteriorly, anteriorly a little rounded, both transverse sulci distinct, about equally so, but neither conspicuous; lateral lobes distinctly longer than high, the lower margin straight, the hind margin almost straight and perpendicular, no distinct sinus present; no median nor lateral carinæ present but the shoulders a little angular; prosternal spines well developed. Legs moderate; anterior tibiæ with conchate foramina, the dorsal surface shallowly and broadly sulcate and unarmed; middle tibiæ flat above and armed on the posterior margin with four very minute sharp tubercles; both fore and middle tibiæ armed beneath on both margins; hind tibiæ armed beneath in the apical half with a number of spines, mostly in two series, above armed on both margins, an apical spine present only on the inner side, the last spine on the outer side being far removed from the apex; femora moderately stout, all the geniculations unarmed, all the femora unarmed dorsally and below narrowly sulcate, the outer margin of the hind and middle leg and the inner margin of the front ones thin and elevated and armed, the number of spines being four or five on the hind, two on the middle, and one on the fore femora, an additional aborted one showing on the left fore leg; the inner carina of the femora is less elevated, on the hind leg scarcely developed at all, and unarmed. Elytra twice as long as the pronotum but failing to reach the tip of the abdomen, apically narrowly rounded. Wings not quite as long as the elytra, completely concealed beneath them. Abdomen plump; subgenital plate and apical styles as in *paltaybamba*; cerci heavy, about three times as long as broad, round and apically bent inward and rapidly tapered to a sharp point.

General color yellowish; head above with two very fine postocular longitudinal streaks of black, and a similar one situated mesially, very small and on top spread into a cruciform spot; fastigium of vertex and the first two joints and the scrobæ of the antennæ mostly piceous and the eyes mottled with fuscous; upper margin of clypeus lined most of the distance with black and a descending outward curving line of the same color extends from the inner lower margin of the eyes to near the clypeal suture; extreme tip of mandibles

black. Pronotum with a longitudinal black band which spreads across the dorsal width on the fore and hind margins of the disk and extends down along the margins of the lateral lobes as a very fine line. Except for the black spines with dark reddish tips the legs are nearly uniformly brownish yellow, the posterior geniculations slightly infuscated.

Length, entire from front of head to tip of abdomen, 23 mm.; pronotum, 5.25 mm.; fore tibiæ, 8 mm.; fore femora, 8 mm.; hind femora, 15 mm.; elytra, 14 mm.

*Type*.—One male, Huadquina, July 30, 5,000 feet altitude. Cat. No. 15052, U.S.N.M.

NANNOTETTIX, species.

Two immature specimens, one male and one female, from same locality as *N. peruvianus* and with same data. If these nymphs are those of *N. peruvianus*, they show that species to be indeed variable, as these specimens are not like the adult in structure or coloration. The infuscation of the pronotum, instead of forming a median band, is dim and follows the location which the lateral carinæ would occupy were such present. The fastigium of the vertex and the two basal segments of the antennæ are scarcely infuscated instead of piceous as in the adult of *peruvianus* and the face is marked by four black spots and streaks. The anterior femora has three spines on the inner carina beneath.

Another immature specimen, a male from same locality but taken four days earlier, probably belongs to this genus. Here the whole insect is mottled with blackish, the antennæ and legs conspicuously annulate and the face solidly piceous and shining.

ANALACOMERA MACULICORNIS, new species.

As indicated by the specific name, this species is separable from its allies by the black marked antennæ.

*Male*.—Fastigium of the vertex elongate triangular, abruptly narrowing about the middle and dorsally sulcate, the margins elevated and, on the posterior half, much thickened or swollen; the whole vertex is directed upward somewhat and the tip is very narrow and beneath it the apex is concave and meets the pointed facial vertex; the antennal scrobæ extend beyond the tip of the vertical fastigium. Eyes round, prominent, moderate in size. Pronotum flat longitudinally above but tending to transverse concavity between the somewhat sharp shoulders; lateral carina scarcely indicated except posteriorly; pronotal disk very broadly and roundly concave both before and behind, the lateral angles very broadly rounded; lateral lobes about as high as long, rounded below and behind, anteriorly nearly straight, the humeral sinus sharp and distinct; the sulci of the pronotum not conspicuous; on the posterior part of the disk there are a couple of



inconspicuous longitudinally disposed elevated ridges. Legs slender; anterior tibiae with open foramina on each side, the dorsal surface slightly sulcate and armed about the middle with a small spine on either side and apically on the outer side with a spine so minute as to be barely visible in certain lights only;<sup>1</sup> middle tibiae more distinctly sulcate above than the fore ones and unarmed on the outer margin, the inner margin with several small spines, the terminal one distinct; hind tibiae distinctly longer than the corresponding femora and armed above and below with many stout spines on both outer and inner margins, apical spines above on both sides. All the femora armed beneath with a few serrations or teeth on one margin only, the geniculations short but acute. Elytra with fully two-thirds their length projecting beyond the abdomen, the wings surpassing considerably the elytra, the projecting part green and more opaque than the transparent membranous portion; the elytra are narrow and slender with the veins inconspicuous, the margins nearly parallel and apically narrowly rounded. Abdomen moderate, short; subgenital plate mesially keeled longitudinally beneath, apically narrowed and squarely notched, the lateral angles long and styliform, not provided with free styles; supraanal plate broad and apically truncate; cerci cylindrical, seven or eight times as long as broad, gently curved inward and apically briefly and gently hooked, the tip forming a short stout naked tooth, the rest of the cercus hairy.

General color greenish; antennae conspicuously marked on the inner side, except on the basal segment, with black for some distance at least from the base, the outer portion being absent in the only specimen seen. The elytra have several ocellate spots, composed of a number of minute dusky specks with a central black dot, and, especially along the anal margin, with many minute black specks visible only under a glass; the tympanal field is black with the central portion yellowish green; the hind tibiae beneath has small black areas at the bases of the spines and the geniculations of the hind femora are infuscated.

Length, entire from front of head to end of wings, 38 mm.; fore femora, 6 mm.; middle femora, 9 mm.; hind femora, 18 mm.; hind tibiae, 20 mm.; elytra, 32 mm.; wings beyond elytra, 4 mm.; width, elytra at middle, 5 mm.

*Type*.—One male, Pampaconas River August. Cat. No. 15053, U.S.N.M.

ANALACOMERA SULCATA Brunner.

One male, Huadquina, July 30, 5,000 feet altitude.

<sup>1</sup> More material is necessary to determine if the fore femora are to be classed as with or without an apical spine.

## PHYLLOPTERA FAMULA Brunner.

One male, Pampaconas River, August.

## PHYLLOPTERA SERVA Brunner.

One male, Pampaconas River, August.

## MICROCENTRUM PERUVIANUS? Scudder.

One female, Pampaconas River, August.

I have determined this specimen as *peruvianus* with some doubt, the type being of the opposite sex and unavailable for examination at this time, the determination being based on the description only, with which, however, this female agrees fairly well, allowing for sexual differences.

## Family GRYLLIDÆ.

## RIPIPTERYX RIVULARIA Saussure.

Two males, two females, Santa Ana, August 4, 3,000 feet altitude.

## RIPIPTERYX FORCEPS Saussure.

Three males, one female, San Miguel, July 24, 6,000 feet altitude; one female, Lucma, August 7, 7,000 feet altitude.

This series shows that the yellow color of certain segments of the antennæ is not good as a specific character. The specimen from Lucma, which is just like the San Miguel specimens otherwise, has the antennæ unicolorously black, no segment showing any yellowish. One of the San Miguel females has the 6, 7, and 8 segments entirely yellow, while the other three have only the 6 and 7 so colored, and then often the apical part of one or both of these segments are black.

## ANUROGYRYLLUS MUTICUS DeGeer.

One male, one female, two nymphs, Huadquina, July 26, 5,000 feet altitude.

The male has fully developed elytra but the wings are aborted, while in the female the wings are caudate.

## ANUROGYRYLLUS FUSCUS, new species.

A blackish species slightly above the usual size of its allies.

*Female*.—Head as broad as the front of the thorax, the eyes, ocelli, and mouth parts as in *muticus*. Pronotum a little broader than long, the lateral lobes bent gently inward on the posterior lower angle, the lower margin straight, descending slightly anteriorly, the fore and hind angles rounded; the anterior margin of the pronotal disk is very broadly and gently concave and the posterior margin correspondingly convex. Elytra as long as the abdomen and apically pointed; wings caudate, extending about half their length beyond the elytra. Legs moderate, the posterior metatarsus large, but little

swollen; upper inner calcar of hind tibiæ a little longer than the middle one and gently curved; the inner apical calcar of the posterior metatarsus is very large and almost half as long as the metatarsus, about twice as long as the outer calcar. Ovipositor rudimentary as usual in the genus.

*Male*.—Similar to the female except that the wings are aborted, the elytra, however, long and apically pointed as in the female. The lateral field of the elytra is also lighter and the lateral lobes of pronotum bear a fleck of yellowish on the lower front corner.

General color blackish above and yellowish beneath. The legs and mouth parts and venter of abdomen are yellowish brown, while the whole upper surface of head, thorax, and elytra is blackish brown, almost black; the wings and lateral field of the elytra are a little lighter than the dorsal surface; the lateral lobes of the pronotum are uniformly blackish; antennæ brown.

Length, from front of head to end of elytra, male and female, 20 mm.; pronotum, male and female, 4 mm.; elytra, male and female, 13.5 mm.; hind femora, male and female, 12.5 mm.; wing beyond elytra, female, 12 mm.; width, pronotum, male and female, 5.5 mm.

*Type*.—One male, one female, Pampaconas River, August. Type, female, paratype male. Cat. No. 15054, U.S.N.M.

The three species of this genus occurring in South America, one of which I consider as of varietal rank only, may be separated as follows:

Lateral lobes of pronotum uniformly yellowish or infuscated only centrally.

Vertex of head unicolorous.....*muticus* DeGeer.

Vertex of head marked by three or four longitudinal lines.

*muticus* var. *clarazianus* Saussure.

Lateral lobes of pronotum almost or quite uniformly blackish.. *fuscus*, new species.

All these forms are dimorphic in wing length, some having the wings caudate and others with them abortive.

#### GRYLLUS, species.

Eight immature specimens, two from Urubamba, July 15, 9,500 feet altitude; three from San Miguel, July 24, 6,000 feet altitude; three from Huadquina, July 14, 5,000 feet altitude. These may represent two or more species.

#### AMUSUS KIRSCHIANUS Saussure.

One female, Pampaconas River, August.

This is considerably smaller than the measurements given for the type, but otherwise fits the description very well.

#### ENEOPTERA SURINAMENSIS DeGeer.

One female, Santa Ana, August 4, 3,000 feet altitude.